

Work Order ID 164800

Monday, July 31, 2017 10:16:53 AM



Ship 8/30

164800

U/R

NID

Page 1

Item ID: D4766-041
Revision ID: URF 17-547
Item Name: Skidtube Assembly

Accept

N900040100

Setup Start *NS1*
Stop *NS2*

Start Date: 8/11/2017 Start Qty: 1.00
Required Date: 8/22/2017 Req'd Qty: 1.00

1

1

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan:

Date: JUL 31 2017

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D4766 Positive Recal E

120

120

Skidtubes

Skidtubes

Skidtubes

0.00

1.01

Memo

1- Cut Aft end as per dwg D4766

2- Deburr ends

3-Drill Aft & Fwd Cap holes using DT8678 & DT8901 ***DO NOT OPEN AFT CAP HOLES***

4- Locate DT Pilot Drill all X-Bolt holes using #30" drill. & Drill Ground wire hole on top of Tube.

5-Drill holes for D5520-1 doubler using DT10309 A & B, locating from 7th and 8th crossbolt holes from aft using .1875 clekos. Spot drill tube using #20 drill. (note 10). Remove DT10309 B. Re-install DT 10309 A drill thru tube and doubler using #20 drill (note 10), cleko as you go. Remove .1875 clekos and open holes in tube and doubler to 0.750". Remove doublers and identify orientation.

6-Countersink rivet holes in skid tube detail M ***NOTE*** 29 places only.

6- Open ground wire hole .297" section D-D (1) place and detail "T" (2) place.

7- Open Aft & Fwd Cap holes using 0.208" drill.

8- Deburr holes.

1 0 BE 17-08-25

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																																																	
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164800

Page 2

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Revision ID: URF 17-547

Item Name: Skidtube Assembly

Accept

N900040100

Setup Start ***NS1***

Stop ***NS2***

Start Date: 8/11/2017 Start Qty: 1.00

1

Required Date: 8/22/2017 Req'd Qty: 1.00

1

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

140

QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.02

DAS
38
9-89

AUG 25 2017

150

150

HandFinish

Hand Finishing

Chemical Conversion Coat per QSI005 4.1

0.00

Memo

0.71

1 0 17-08-25

160

160

QC

Quality Control

QC7-Inspect Chemical Conversion Coat

0.00

Memo

0.01

DAS
47
9-89

17-08-25

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐	Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐	Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐	Engineering ☐ Quality ☐ Other ☐
Date: _____		Step #: _____		QTY Effective: _____	
Description Work Order Deviation			Disposition		
			Completed By		
			Lead hand / Supervisor Approval Verification		
			QC / QA Coordinator Approval		

Root Cause				FAULT CATEGORY			
Environment ☐	Design ☐	Doc/Data ☐	Equip/Tooling ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
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				OTHER: ☐			

Work Order ID 164800

Monday, July 31, 2017 10:16:53 AM

164800

Page 3

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/11/2017 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 8/22/2017 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start ***NR1***
QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Skidtubes	0.00							
170									
Skidtubes	Memo	1.71				1	0	B.R.	170825
Skidtubes									

1-Install doublers using DT10309 B. Shave rivets as required. Detail M.

2- Bond web as per Dwg D4766 & OSI 015
A/R 241 Sike Flex Batch: 137946
Exp Date: 18/03-29
start time: 4:00
end time:

***NOTE, 35.9" FROM AFT END AS PER DWG D4766. SHEET 6

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

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164800

Page 4

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 8/11/2017 **Start Qty:** 1.00 *** 1 ***

Cust Item ID:

Required Date: 8/22/2017 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/
Work Center ID

180

Operation Description

QC5- Inspect part completeness to step on W/O

Set Up/ Run Hours

0.00

Tool ID

Tool #

**Plan
Code**Accept
QtyReject
QtyReject
Number

**Insp.
Stamp**

180

QC

Memo

0.02

Quality Control

93
17-08-28

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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164800

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Required Date: 8/22/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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185

0.52

185

Skidtubes

Skidtubes

Memo

1.12

1- Bend aft tube as per dwg VERIFY HEIGHT and record:

2- Remove bending mark and mark center line on end of tube

3- Drill AFT float holes using DT _____ A,B,C.

4- Open X-Bolt holes to size as per Dwg D4766 and detail K

5- Drill Rivet Holes as per Dwg D4766 Using DT10065

6- Deburr Rivet holes & 0.750" holes and touch up alodine rivet holes only.

7- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4766.

A/R Proseal Batch: 13695312H CURE TIME START TIME: 6:00

NOTE: SHAVE RIVET AFTER 12HRS CURE TIME.

8- Ream holes to finish size and Swage x-bolt spacers as per Dwg D4766 and section C-C

9- Trim/Grind flush per QSI 002

10- Swage x-bolt spacer as per dwg D4766 section G-G. Trim and grind flush. Open thru holes 0.625".

11- Deburr and blow out chips from inside of tube.

8.5625"

TW 17-08-28

BE 17-08-28

TW 17-08-28

TW 17-08-29

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Work Order ID 164800

Monday, July 31, 2017 10:16:53 AM

164800

Page 6

Item ID: D4766-041 Accept *N900040100* Setup Start *NS1*
 Revision ID: URF 17-547 Stop *NS2*
 Item Name: Skidtube Assembly
 Start Date: 8/11/2017 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 8/22/2017 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
188 *188* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.02				1			DAS 38 9-89 AUG 29 2017
210 *210* HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.	0.00 0.72				①	✗		2017-08-29 JSL BETZ
220 *220* SprayPaint Spray Painting	Memo 1- Apply Primer as per QSI 005 4.2.1.3.3 and dwg A/R Primer Batch: _____ 2- Paint White as per QSI 005 4.2.2.4 and dwg A/R Paint Batch: _____	0.00 2.00				1			AUG 31 2017 DAS 13 9-89 DAS 1 9-89 P/O: 37620 AUG 31 2017

Revising

auto source
paint

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Work Order ID 164800***164800***

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Monday, July 31, 2017 10:16:53 AM

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/11/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 8/22/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC14- Inspect Spray Paint	0.00							
230									
QC	Memo	0.01							
Quality Control									

D 17-09-03 PD

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : _____			

Monday, July 31, 2017 10:16:53 AM

164800

Item ID: D4766-041
Revision ID: URF 17-547
Item Name: Skidtube Assembly

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 8/11/2017 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 8/22/2017 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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260

0.00

260

HandFinishing

HandFinish

Memo

1.41

Hand Finishing

1- Install Ground Wire inserts as per Dwg D4766.

2-Inspect for Foreign objects

3-Wet Install hose shield D5534-1 section P-P and note 12.

A/R Proseal Batch: M137995 11/18 Exp

12H CURE TIME START TIME: 10:00 AM

NOTE: SHAVE RIVET AFTER 12HRS CURE TIME.

4- Install Fwd & Aft caps as per Dwg D4766 and Detail "A" & "B". Fastener must be install wet as per note (9).

A/R 241 Sika Flex Batch: 1131991
Exp Date: 18/03

5- Wing Walk as per Dwg D4766 and QSI 005 4.4
Batch: 1137947

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QS1042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

Work Order ID 164800

Monday, July 31, 2017 10:16:53 AM

164800

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Item ID: D4766-041 Accept *N900040100* Setup Start *NS1*
 Revision ID: URF 17-547 Stop *NS2*
 Item Name: Skidtube Assembly
 Start Date: 8/11/2017 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 8/22/2017 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	QC5- Inspect part completeness to step on W/O	0.00							
270 QC Quality Control	Memo	0.02							① 17-09-06 ①
300	Identify as per dwg & Stock Location: _____	0.00							
300 Packaging Packaging	Memo	0.01							SmB 17/9/7
310	QC21- Final Inspection - Work Order Release	0.00							
310 QC Quality Control	Memo	0.10							17/9/8 ②

POSITIVE RECALL

EFFECTIVE 17-08-21 AUTH N.O.

RELEASED 9 DATE 17-09-06

Drawing not F&A approved
on per ECN 17-547

DAS
21
9-89

SEP 07 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Date :	Step #:	QTY Effective :	MRB (QSI042) Approval
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Description Work Order Deviation	Disposition	Completed By
		Lead hand / Supervisor Approval Verification
		QC / QA Coordinator Approval

Root Cause	FAULT CATEGORY				
<table style="width:100%;"> <tr> <td style="width:50%;"> Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ </td> <td style="width:50%;"> No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐ </td> </tr> </table>	Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	<table style="width:100%;"> <tr> <td style="width:50%;"> Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ </td> <td style="width:50%;"> Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ </td> </tr> </table>	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐				
Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐				
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Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
OTHER : _____					

Picklist-Print

Monday, July 31, 2017 10:16:52 AM

Page 1

Work Order ID: 164800

164800

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 8/11/2017

Required Date: 8/22/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.04.17 NEW ISSUE DD VERF:JLM IPP REV:B
13.08.08 PB2 DD VERF:JLM IPP REV:C 13.11.14 AS PER
PB3 DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG
DWG REV.B DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.D
REV.C DD VERF:JLM DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN526C1032R10		Purchased	No			260	Each	117.0000	2	2			
AN526C1032R10									**			2017/09/05 BEB	
Screw													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					FP001			17		(K2)			
					m135133			17					
					ST327			100					
					m137851			100					
CR3212-5-05		Purchased	No				Each	300.0000		58			
CR3212-5-05									**			BE17-08-25	
Rivet													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					CCK003			300		58			
					m138040			300					
CR3213-5-06		Purchased	No				Each	0.0000		10			
CR3213-5-06									**			2017/09/05 BEB	
Cherry Rivet													
D2965-3		Manufactured	No			260	Each	66.0000	1	1			
D2965-3									**			2017/09/05 BEB	
Cap													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					FP001			66		(K1)			
					126369			66					

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Picklist Print

Monday, July 31, 2017 10:16:52 AM

Work Order ID: 164800

164800

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 8/11/2017

Required Date: 8/22/2017

Start Qty: 1.00

Required Qty: 1.00

D2973	Manufactured	No	260	Each	30.0000	2	<u>2</u>
D2973						**	
Cross Bolt Spacer							

Location	Loc Qty	Loc Code
LG001	30	
<u>144627</u>	30	

D4766-041-BENT	Manufactured	No	120	Each	0.0000	1	<u>1</u>
D4766-041-BENT						**	

Extrusion Bent

D5085-1	Manufactured	No	170	Each	6.0000	1	<u>1</u>
D5085-1						**	

Web

Location	Loc Qty	Loc Code
LG002	6	
<u>146172</u>	6	

D5304-1	Manufactured	No	260	Each	24.0000	2	<u>2</u>
D5304-1						**	

Crossbolt Spacer

Location	Loc Qty	Loc Code
LG001	24	
145050	4	
<u>146516</u>	1	
161952	19	

D5520-1	Manufactured	No		Each	0.0000	2	<u>2</u>
D5520-1						**	

Doubler

D5534-1	Manufactured	No		Each	0.0000	2	<u>2</u>
D5534-1						**	

Hose Shield

**B164803*

8164802 BE170821

①
②

17-08-29

BE170824
B165266 x2

(x2) 201709105 BEB

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
OTHER : _____									

Picklist Print

Monday, July 31, 2017 10:16:52 AM

Page 3

Work Order ID: 164800

164800

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 8/11/2017

Required Date: 8/22/2017

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0332R

Purchased

No

260

Each

3,846.000

5

5

NAS1149C0332R

WASHER

**

2017-08-09/05 BEB.

Location

Loc Qty

Loc Code

FP001

*1138237

798

m137951

798

GA

494

m133284

22

m136444

472

ST260a

1946

m137851

1946

ST266

608

m137381

608

D4686-1

Manufactured

No

260

Each

64.0000

11

11

D4686-1

Spacer

**

2017-08-29

Location

Loc Qty

Loc Code

LG001

64

145075

44

146515

20

D4753-1

Manufactured

No

260

Each

53.0000

22

22

D4753-1

Doubler

**

BE 17-08-28

Location

Loc Qty

Loc Code

LG001

53

153498

7

161929

23

162891

23

AEIS-1032-130

AEIS8-1032-130

Purchased

No

260

Each

0.0000

3

3

AFI S-1032-130

Rivnut

**

2017-09-05 BEB.

115X820

Monday, July 31, 2017 10:16:52 AM

Shop Packet Print

Page 3

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																						
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																						
Large Fab ☐	Composite ☐	Supplier ☐																							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																		
Description Work Order Deviation				Disposition				Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____																	
Root Cause		FAULT CATEGORY																							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐				Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐				Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐				Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐											
		OTHER : _____																							

Picklist-Print

Monday, July 31, 2017 10:16:52 AM

Page 4

Work Order ID: 164800

164800

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 8/11/2017

Required Date: 8/22/2017

Start Qty: 1.00

Required Qty: 1.00

AN3C4A Purchased No

260 Each

1,141.000 3 3

AN3C4A
Bolt

**

2017/09/05 BEB

Location	Loc Qty	Loc Code
FG	20	
122814	20	
FP001	183	
M136450	23	
M136740	8	
M136986	20	
M137075	43	
M137164	2	
M137361	5	
M137820	82	
OVER002	925	
M137507	150	
M137587	250	
M137963	400	
M138040	125	
ST350	13	
M135704	13	

(B)

MS20601-AD4W3 Purchased No

260 Each

409.0000 44 44

MS20601-AD4W3
Rivet

**

BE 17-08-28
MB8238 x48

Location	Loc Qty	Loc Code
CCK004	100	
m137963	100	
LG001	199	
m137459	3	
m137820	196	
ST308	110	
m137587	110	

Monday, July 31, 2017 10:16:52 AM

Shop Packet Print

Page 4

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Picklist Print

Monday, July 31, 2017 10:16:52 AM

Work Order ID: 164800

164800

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 8/11/2017

Required Date: 8/22/2017

Start Qty: 1.00

Required Qty: 1.00

D2965 Manufactured No 260 Each 28.0000 1 1

D2965

Cap

**

2017/09/05 BEB.

Location

Loc Qty

Loc Code

FP001

28

127852

28

(X1)

AN3C5A

Purchased No

260 Each

1,280.000 2 2

AN3C5A

Bolt

**

2017/09/05 BEB.

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

409

M137361

409

OVER002

800

M137710

200

M137963

600

ST350

66

M135442

66

(X2)

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

ITEM	QTY	P/N	DESCRIPTION
	X	D4766-041	SKIDTUBE
1	1	D2985	CAP
2	1	D2985-3	CAP
3	1	D4766-043	SKIDTUBE SUB ASSY
4	2	AN8C5A	BOLT
5	2	AN528C1032R10	SCREW
6	2	NAS1149C0332R	WASHER



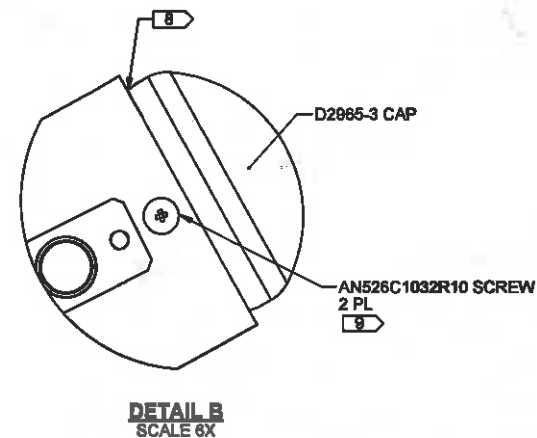
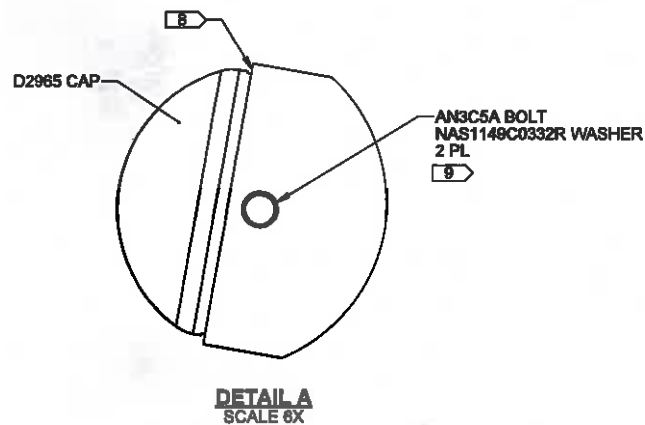
D4766-041 SKIDTUBE

POSITIVE RECALL

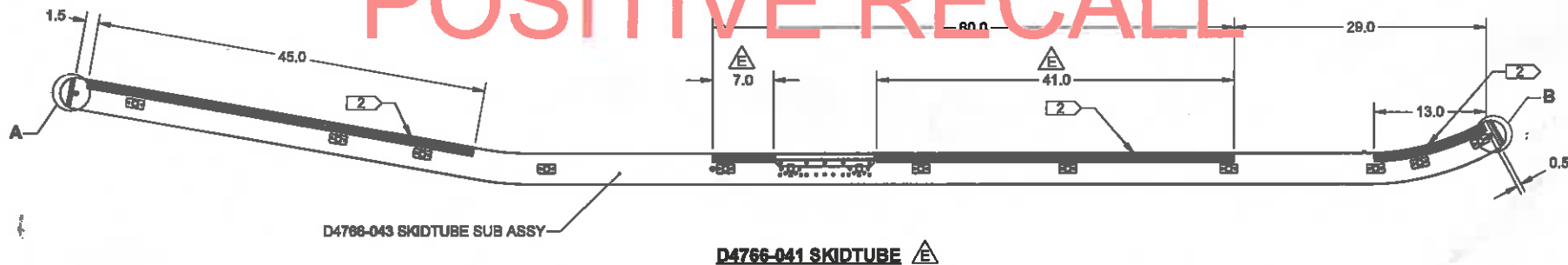
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 164800
JUL 31 2017

E	SHEET 4: ADD ITEMS 3, 4, 5 & 6. SHEET 5: ADD NOTES 9-13. DETAIL M, SECTION N-N, SECTION P-P & DIM 35.9 WAS 50.2. SHEET 7: Ø0.188 DIM WAS Ø0.125. WEIGHT UPDATE. ADD PROSEAL 1422. REASON: NCR 17-6303, PART 6-519	AJS	17.03.30
D	ADDED D5304-1 SWAGED CROSSBOLT SPACER FOR GHL LOCATIONS. ADDED SHT 1. REMOVED D3492-055 PLUG ASSEMBLIES. RE-ORDER SECTIONS	AP	15.11.02
C	RE-ORGANIZED SECTIONAL DETAIL VIEWS ALL SHTS; IDENTIFICATION MOVED FROM SHT 1 TO SHT 6; SECTION D-D AND DETAIL K 11PL WAS 12PL; MODIFIED D4766-043 FINISH; Ø0.750 WAS Ø0.758 (B4-3); D3085-1 WAS D4766-1. VARIOUS MINOR DIM CHANGES TO D4766-1/045 TO MATCH STD SKIDTUBE PROFILE; 35.0 WAS 29.1 (B7-4); GROUNDING FASTENER MOVED AFT 0.25 (D6-5); D2986 HARDWARE AND GROUNDING HARDWARE CHANGED TO STAINLESS; ADD NOTE 9 (SHT 1) AFT FLOAT HOLES NOW DIMENSIONED AFTER AFT BEND	AP	15.02.25
B	FWD CAP WAS D2985 NOW D2985-3. D3492-055 WAS D3492-051. SWAGING NOW 0.650 WAS 0.661 (C7-2). ADDED BENDING DETAIL TO SHEET 4. MATERIAL D2982-100 WAS D2982-185 (A7-5). ADDED DETAIL L ON SHT 3. ADDED TOP VIEW ON SHT 5. REPLACED D4766-1 WITH D4827-041 ON SHT 3. GROUND HANDLING THRU HOLES SPACERS NOW WELDED. SEE SECTION H-H (B4-2). RE-ORDERED SECTIONS AND DETAILS.	AP	13.08.08
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	AJS		
CHECKED	ML	DRAWING NO.	REV. E
MFG. APPR.	DP	D4766	SHEET 1 OF 7
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	17.03.30	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS COVENANT THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

APPROVED



POSITIVE RECALL



NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 34.6 lbs
- 8) SEAL MATING SURFACES WITH SIKAFLEX -241/-281 OR PROSEAL P/S 890/1422 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-281 OR PROSEAL P/S 890/1422 OR MIL-S-8802 CLASS B2 SEALANT

APPROVED

DESIGN	AP
DRAWN	AJS
CHECKED	ML
MFG. APPR.	DP
APPROVED	WM
DE APPR.	DS
DATE	17.03.30

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO.
D4766

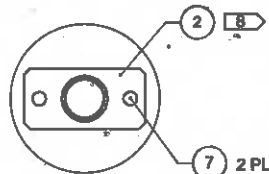
REV. E
SHEET 2 OF 7

TITLE
SKIDTUBE

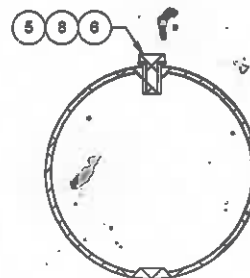
SCALE
NTS

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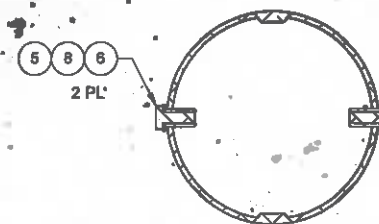
ITEM	QTY	P/N	DESCRIPTION
	X	D4766-043	SKIDTUBE SUB ASSY
1	11	D4686-1	SPACER
2	22	D4753-1	DOUBLER
3	1	D4766-045	SKIDTUBE SUB ASSY
4	2	D5304-1	CROSSBOLT SPACER
5	3	AELS-1032-130	INSERT
6	3	AN3C4A	BOLT
7	44	MS20601AD4W3	RIVET, BLIND, CSK
8	3	NAS1149C0332R	WASHER



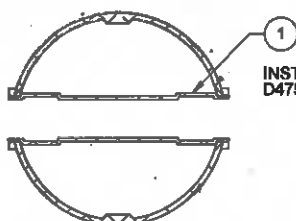
DETAIL E
SCALE 6X
22 PL



SECTION D-D
SCALE 6X



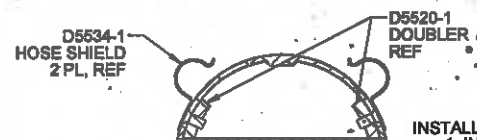
SECTION F-F
SCALE 6X



SECTION C-C
SCALE 6X
11 PL

INSTALL D4686-1 SPACER AFTER INSTALLING D4753-1 DOUBLERS AS FOLLOWS (11 PL)

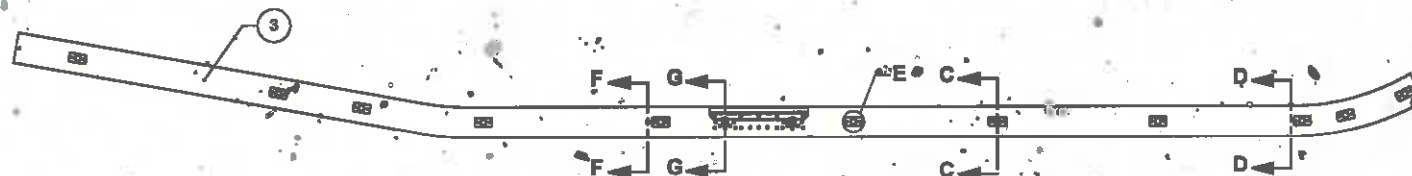
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.000/-0.000$ X 1.0 DP PER QSI 002
3. TRIM AND FLUSH PER QSI 002



SECTION G-G
SCALE 6X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.565 +0.005/-0.000$ X 1.0 DP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$



D4766-043 SKIDTUBE SUB ASSY

NOTES:

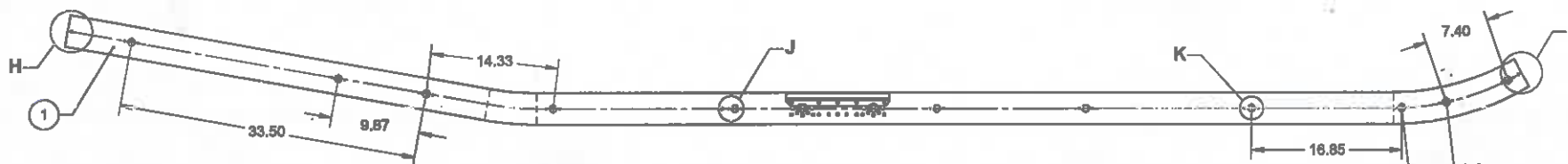
- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 33.9 lbs
- 8) SEAL FAYING SURFACES USING PROSEAL P/S 890/1422 OR MIL-S-8802 CLASS B2 SEALANT

APPROVED

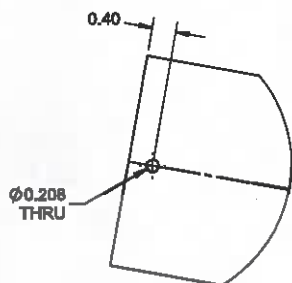
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DRAWN	AJS
CHECKED	ML
MFG. APPR.	DP
APPROVED	WM
DE APPR.	DS
DATE	17.03.30

DART AEROSPACE USA, INC.	
EUGENE, OR	
DRAWING NO.	REV. E
D4766	SHEET 3 OF 7
TITLE	SCALE
SKIDTUBE	UNITS
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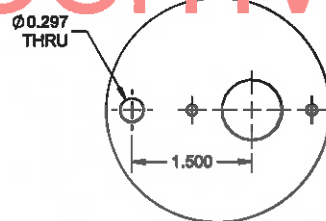
ITEM	QTY	P/N	DESCRIPTION
	X	D4766-045	SKIDTUBE SUB ASSY
1	1	D4766-1	SKIDTUBE
2	1	D5085-1	WEB
3	2	D5520-1	DOUBLER
4	2	D5534-1	HOSE SHIELD
5	58	CR3212-5-05	CSK RIVET, CHERRY MAX
6	10	CR3213-5-06	RIVET, CHERRY MAX



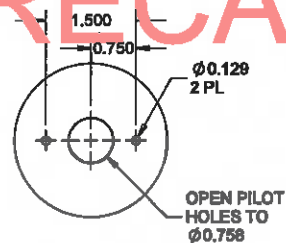
D4766-045 SKIDTUBE SUB ASSY



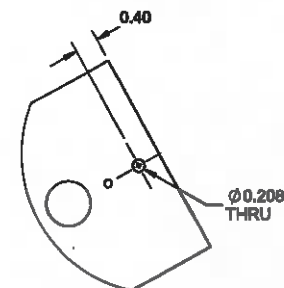
DETAIL H
SCALE 6X



DETAIL J
SCALE 4X



DETAIL K
11 PL (BOTH SIDES)
SCALE 6X



DETAIL L
SCALE 6X

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 32.9 lbs



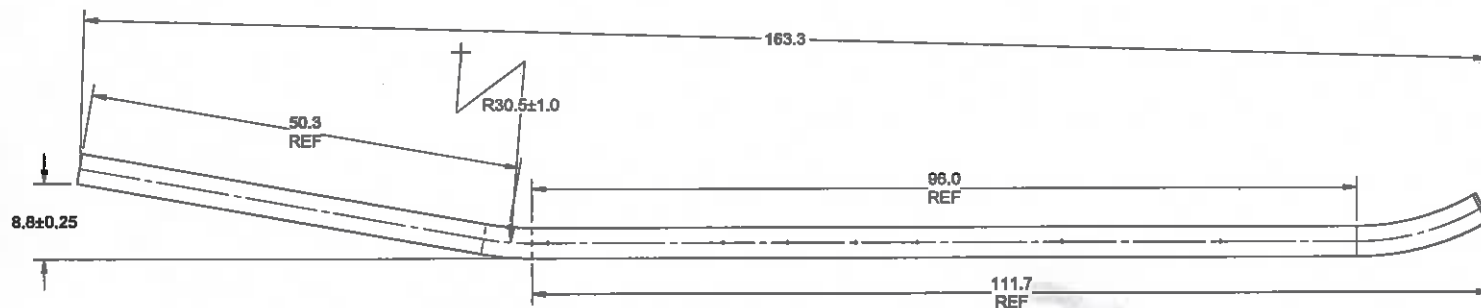
APPROVED

DESIGN	AP
DRAWN	AJS
CHECKED	ML
MFG. APPR.	DP
APPROVED	VM
DE APPR.	DS
DATE	17.03.30

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO.	REV. E
D4766	SHEET 4 OF 7
TITLE	SCALE
SKIDTUBE	NTS

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D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, AFT BEND)



D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, FWD BEND)

POSITIVE RECALL

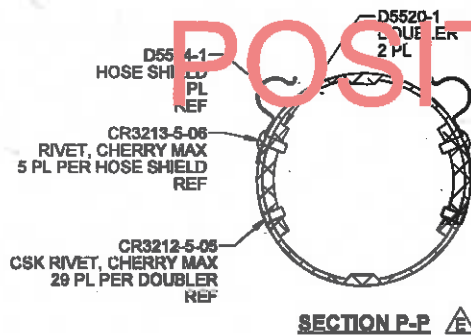
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DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. E
MFG. APPR.	DP	D4766	SHEET 5 OF 7
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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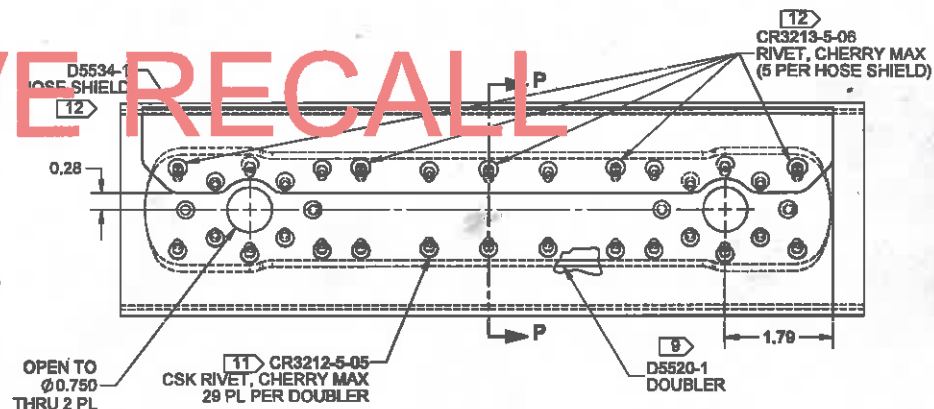
8 7 6 5 4 3 2 1



D4766-045 SKIDTUBE SUB ASSY
(ASSEMBLY DETAIL)



SECTION P-P



DETAIL M
SCALE 7X

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) INSERT D5085-1 WEB INTO D4766-1 EXTRUSION IN LOCATION SHOWN AND BOND INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015.
- 9) LOCATE THE D5520-1 DOUBLER USING THE $\phi 0.188$ PILOT HOLES ON THE SKIDTUBE AND DOUBLER
- 10) LOCATE QTY (34) HOLES ONTO THE SKIDTUBE PER D5520-1 DOUBLER AND DRILL $\phi 0.181$ THRU SKIDTUBE AND DOUBLER USING DT 10309
- 11) COUNTERSINK THE SKIDTUBE $\phi 0.286 \times 100"$ (29 PL) AND INSTALL EACH D5520-1 DOUBLER USING QTY (29) CR3212-5-05 CSK RIVETS
- 12) FOR INSTALLATION OF THE D5534-1 HOSE SHIELD:
-INSTALL ON FINISHED (PAINTED) SKIDTUBES ONLY
-COAT THE FAYING SURFACES WITH PROSEAL 890/1422.
-INSTALL THE QTY (5) CR3213-5-06 RIVETS WET USING PROSEAL 890/1422

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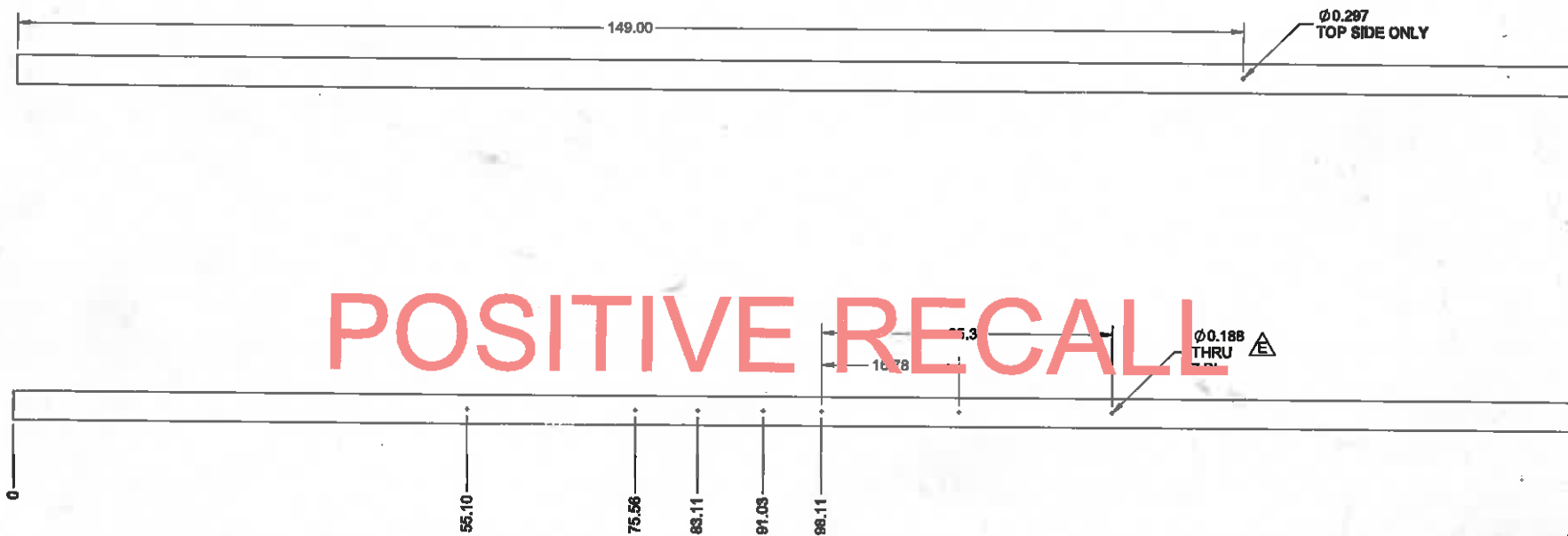
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CHECKED	ML
MFG. APPR.	DP
APPROVED	VM
DE APPR.	DS
DATE	17.03.30

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EUGENE, OR

DRAWING NO.	REV. E
D4766	SHEET 6 OF 7
TITLE	SCALE
SKIDTUBE	NTS

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POSITIVE RECALL



D4766-1 SKIDTUBE

NOTES:

- 1) MATERIAL: MAKE FROM D2962-190 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF AFT END OF SKIDTUBE
- 7) WEIGHT: 18.97 lbs

APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. B
MFG. APPR.	DP	D4766	SHEET 7 OF 7
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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